Epidemiology of Traumatic Brain Injuries in Iowa
Fact Sheet

Introduction

Termed the "silent epidemic", traumatic brain injury is the most debilitating outcome of injury characterized by the irreversibility of its damages, long-term effects on quality of life, and healthcare costs. The latest data available from the CDC estimated that, nationally, each year 1.7 million people sustain a traumatic brain injury. Of those 1.7 million, 52,000 (3%) people will die; 275,000 (16%) will be hospitalized, and 1.365 million (80%) will be released from emergency room departments (ED), (CDC, 2008).[i] Traumatic Brain Injury is a result of an external force which transfers energy to the brain. Though 75% of the cases are reported as "mild" (concussions), TBI contribute nationally to 30% of deaths. Furthermore, TBI causes functional changes disrupting the survivors thinking, language, sensations and emotions adding to the burden of disability.

Surveillance systems

In Iowa, TBI surveillance is based on deaths certificates, hospital discharges (inpatient and emergency department visit), and the State Trauma Registry. Death certificates and hospital discharges are used to generate a report on the burden of TBI every other year. The analysis includes a summary of the number of cases as well as the demographic distribution, severity, and hospital charges. The state trauma registry is a legislative mandate, which requires Level I and II hospitals to report trauma patients to the Department of Public Health. The registry is queried every quarter to identify TBI survivors; outreach letters are sent to guide them to the Iowa Brain Injury Association to assist with resource referral.

Table 1: TBI Definition in the State Trauma Registry

TRAUMATIC BRAIN INJURY	ICD 9 Codes CM
-Fracture of vault of skull	-800.00–800.99
-Fracture of base of skull	-801.00–801.99
-Other and unqualified skull fractures.	-803.00–803.99
-Multiple fractures involving skull or face with other bones.	
-Concussion.	-804.00–804.99
-Cerebral laceration and contusion.	-850.00–850.99
-Subarachnoid, subdural, and extra-dural hemorrhage, following injury.	-851.00–851.99
-Other and unspecified intracranial hemorrhage following injury.	
-Intracranial injury of other and unspecified nature.	-852.00–852.59

Traumatic Brain Injury in Iowa

Incidence of TBI:
In Iowa there are on average 545 injury deaths per year (TBI makes up 30% of all injury deaths), 1,591 hospitalizations (10 % of all injury hospitalizations) and 5,899 Emergency Department visits (7% of all the injuries seen in the ED). On average, for every one death, there are three individuals hospitalized and eleven who will visit the emergency department. Among those hospitalized, the department will refer to the Iowa Brain Injury Association around 1,100 (70%) cases for needed services.

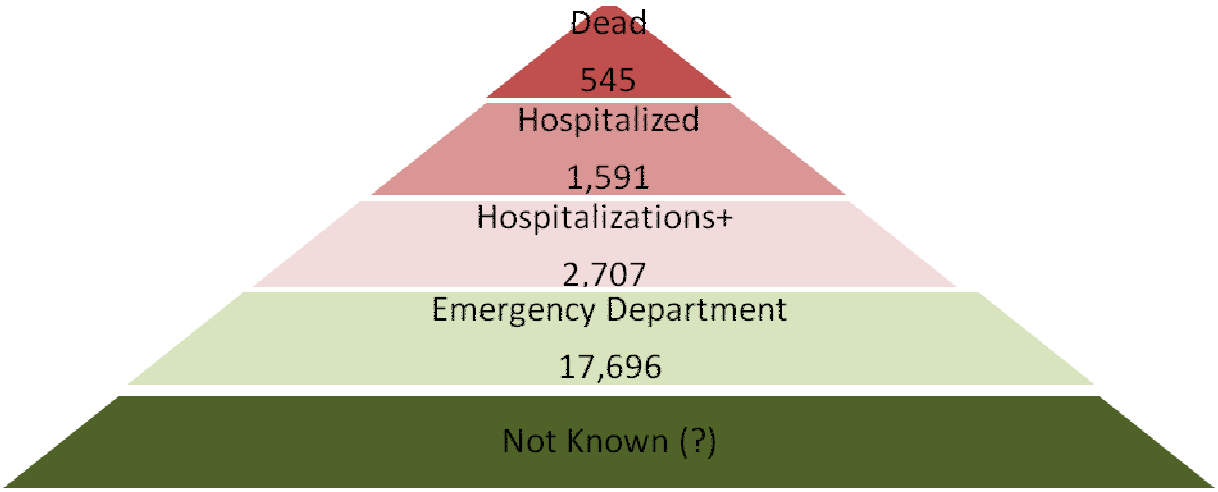

Figure 1: TBI Deaths, Hospitalizations, ED visits in Iowa 2006-2008

Risk Factors

In Iowa, TBI death and hospitalization occurred more frequently among whites (93%), males (60%), and seniors, 65+ of age (40%). TBI rates were higher in rural counties. The mortality rate for counties with less than 10,000 was 33 per 100,000 and was 2.3 times greater than in counties with more than 50,000 people.

Leading causes of TBI

The leading causes of TBI deaths are Motor Vehicle Crashes (MVC), including passenger car, trucks, motorcycles, and pedestrians (31%), falls (27%) and firearms (25%). The leading cause of TBI related hospitalizations were falls (43%), MVC (25%) and struck by/against (6%). MVC and Struck-by/against were more likely among youth and adults, while falls were predominant among the elderly.

Prognosis

Following hospitalization, on average 60% of TBI cases will be sent home, while the rest will be referred to long term care (16.7%) and rehabilitation services (7.7%) or transferred to another inpatient hospital (8.4%). Around 7% of cases will die in the hospital. Generally, TBI cases seen at the ED have better prognosis with 90% of them being sent home and only 7% transferred to inpatient services.

Estimated Hospital Charges per Year

The average number of days stayed in hospital for MVC is four days compared to three days for falls. The total hospital charge from MVC amounted to $20 million with an average $23,000 for one hospitalized case and stay. The charge for one hospitalization due to fall averaged $12,000. Firearm hospitalization charges reached the bar of $19,000 per case for an average total of $620,000. Private payers were most likely to be billed for MVC, which present a greater length of stay and more debilitating outcomes. Medicare and Medicaid, which are billed differently than private insurers, were mostly charged the falls related hospitalizations.

Conclusions

Overall, traumatic brain injury hospitalization rates in Iowa have been slightly increasing over the past10 years, specifically among older adults and because of falls.

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[i] Faul M, Xu L, Wald MM, Coronado VG. Traumatic Brain Injury in the United States: Emergency Departments Visits, Hospitalizations and Deaths 2002-2006. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2010.